

Date: June 28th, 2006

To: Jim Anderson, DEQ NWR, Portland Harbor Section, Manager

From: Jennifer Peterson, DEQ NWR, Portland Harbor Section, Toxicologist

RE: Table 1, Selected acute and chronic ecological screening levels (Eco SLs) for chemicals in water, REVISED DRAFT, May 25, 2006

General Comments:

Hierarchy for Value Selection: Comments were made on the hierarchy for selecting values in the companion TM for this table (*Process for Selecting Acute and Chronic Water Screening Levels for Portland Harbor Surface Water, Groundwater, and Transition Zone Water*, DRAFT, April 29, 2005). For the readers benefit, it should be clear in this table or elsewhere the hierarchy that was used to select water screening values. ODEQ guidance should not be cited, as these sources are included within the DEQ table – *the original source should be cited according to the hierarchy below* (according to EPA's comments).

- a) DEQ AWQC where lower than national ambient water quality criteria and recent proposed criteria have not been approved by EPA. Use Table 33A and follow instructions for using values from DEQ's Table 20 (see attached DEQ table for clarification).
- b) Federal NAWQC and
- c) The most protective LCV from Suter and Tsao (1996)
- d) EPA final chronic values calculated as a part of EQP methodology (PAHs) (Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures).
- e) Canadian WQC
- f) ORNL

A cursory review of a limited suite of contaminants showed that this hierarchy was not always followed (e.g. DDTs). This is despite the fact there was a specific EPA comment addressing the DDT number in the March 24 comment letter. ***Therefore, a more detailed review of these SLVs is needed to ensure selection is appropriate. I was only able to check a few select chemicals, and the majority were not reviewed.***

Framework for Use: Acute and chronic values are provided here. For the evaluation of adverse effects to aquatic life, chronic values are the most appropriate. Are acute values proposed for use in a screening evaluation (e.g. Round 2 report)?

Bioaccumulative Potential: Only effects based criteria are provided here, but it should be noted (table footnote, associated TM or other) that bioaccumulatives detected in water will not be screened, but will be carried forward for further analysis.

Literature Search: Since the TM was not revised, it is not possible to determine if the revised Table 1 (May 25, 2006) included a new search that includes effects data for adult or juvenile salmon olfactory disruption, or if the additional literature studies recommended by EPA were consulted appropriately. A more thorough literature review should be completed to determine the appropriateness of the values. In addition, it is unclear if this list includes all contaminants detected in the surface water and transition zone water sampling events. Additional literature reviews may need to be completed for additional contaminants, or site specific effects need to be determined.

Amphibian Specific Water SLs: It appears that Table 2 which contained the amphibian specific toxicity values has been dropped. If this is to be done, then we need to be sure the values presented in Table 1 are protective of amphibians, especially where we have sensitivity information specific to them. Table 2 (dated September 6, 2006) containing acute and chronic amphibian water screening numbers should be checked for appropriateness, and then compared to the new Table 1 (dated May 26, 2006) to ensure the new one number approach is protective of amphibians (if this is even how we want to proceed). Some data on amphibians appears to be missing (e.g. see Table 14a-18 in *Ecotoxicology of Amphibians and Reptiles*, Sparling et al., SETC, 2000. This table had data for several compounds omitted from table 2 (e.g. 2,4-D). It looks like some of the PAH SLVs are lower in the amphibian table (e.g. Fluoranthene). The antimony, arsenic, nickel, selenium, zinc, and copper numbers are all lower in the amphibian list. The contaminant list is also different (e.g. why is gamma-hexachlorocyclohexane not in Table 1?). More references than are included in Table 2 may also be available. For example, the Table 2 amphibian number for perchlorate does not include the newest information on amphibian sensitivity as stated in the specific comments. How complete is Table 2?

Specific Comments (this review was limited to the compounds listed):

TPH SLV: A TPH value needs to be included here according to EPA comments dated March 24, 2006.

PAHs: EPA's "Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures", 2003. The chronic SLs pulled from this document are o.k., but the methodology for the acute values is unclear. There are some references cited that need review (e.g. Newsted and Giesy 1987 and Kagen et al 1985). The acute values for fluoranthene

DDTs: The hierarchy outlined above was not used for DDTs. ODEQ values were cited instead of the original source. ODEQ values contain outdated Oregon Water Quality Criteria for DDT. The NAWQC are currently being used (effective February 15, 2005) by the State of Oregon, and are listed in Table 33A as those NAWQC that have been adopted. The table should be reflected to show the NAWQC number of 0.001 ug/L, and it should be noted (as it is in the NAWQC) that this number applies to DDT and its metabolites (i.e., the total concentration of DDT and its metabolites should not exceed this value). A “total DDT” value should be added to the table to emphasize this point as it listed for total PCBs.

The NAWQC do not have separate DDE and DDE values because the DDT number is to include all metabolites in the table. If we want to include values for DDE and DDT we will need to go to secondary values (e.g. ORNL SCVs – DDD is 0.011).

2,4-D: There is a Canadian Guideline available for 2,4-d of 4.0 ug/L, but a value from MacDonald ES of 47 was used instead.

PCBs: The citation for total PCBs should be the NAWQC of 0.014 ug/L (cite this instead of the Tier II value; the ODEQ value is citing the NAWAC; this criteria as adopted Feb. 15, 2006). The total PCB value should indicate it is the sum of all congener or all isomer or homolog or Aroclor analyses). I am not sure how useful the Aroclor SLVs are. There are data on exposing Aroclors in water to organisms, but we will never find a true Aroclor signature in water in the environment due differential environmental properties and weathering. In addition, we only have congener data in water and not Aroclor.

Dioxin: ODEQ does not have an acute value presented in Table 2, so it is unclear where this value is coming from. It also looks like an older AWQC (1984) was used; the NAWQC does not have a value for dioxin.

Perchlorate: The Dean et al paper did not include amphibian data conducted by Goleman et. al. 2002 that showed effects at lower concentrations related to tail resorption and forelimb emergence, and therefore may not be sufficiently protective of all aquatic species (esp. amphibians). I am including a re-calculation of the perchlorate AWQC number using this information that was done by Paul Seidel, another toxicologist here at DEQ. The EPA tier II values also did not include the information on tail resorption and forelimb emergence, where effects were observed at lower concentrations.